'The incalculable potency of community': the role of science fiction in religion and science

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The Role of Science Fiction in Religion and Science

This article describes a role for science-fiction literature as a tool with which to explore the shared concerns of science and religion. Science fiction is not, however, simply a servant to theological or scientific truth claims. Science fiction demands a particular set of ontological rules, and it challenges both theology and science to carefully consider their own methods and claims. In describing a role for science fiction in science and religion studies, we will re-evaluate the terms 'fabulation' and 'myth,' as described by Henri Bergson and Paul Tillich. Through this I will suggest ways in which theology as an academic discipline can participate in what I will term 'speculative empiricism,' reinforcing the need for creativity. This speculative empiricism will require a hospitality towards 'fabulation' that understands it not as invention or 'making up,' but as part of reconciling knowledge and understanding. I will use readings of Olaf Stapledon's *Star Maker* and *Last and First Men* as models for this endeavour.

Keywords: Science fiction, Religion and science, Olaf Stapledon, Speculative empiricism

1. Introduction

The disciplines of natural sciences and theology have a fraught history, and there is no need to rehash it here. Today's discussions in academia are interested not so much in unpacking the 'two cultures' debate further, as in finding the tools for reconciling the two discourses. One of these tools, of course, must be language. Practitioners must find ways of translating concepts into terms understandable to (and accepted by) each other. The purpose of this article is to suggest the literature of science fiction as an appropriate negotiator.

Literary critic Mieke Bal posits interdisciplinary discourse in terms of travelling concepts. By travelling between disciplines, concepts undergo change and translation. Because of the nature of travelling concepts, claims Bal, they enable "both a description of and an experimentation with the phenomena" (Bal 2002, 33; see also Stengers 1987). In this article, I will suggest

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that science-fiction literature is a genre through which both the natural sciences and theology travel, and their concepts are translated into other discursive forms. Science fiction is a creative response to both science and theology, a response which illuminates the creative potential in both these sets of disciplines. As literary critic Seo-Young Chu comments: "Through its prolific abundance in today's global culture and its otherworldly relevance to matters of the world, science fiction presents itself as an intriguingly convenient resource for generating new perspectives on an ancient topic" (Chu 2010, 3). In an attempt to make a case for creativity as a promising (and even necessary) tool for science and theology, this article will draw on various aspects of process philosophy as it is depicted in science fiction. This is not intended to privilege process thought as a theological approach, but to provide a starting point for imagining what a creative collaboration between science and theology might look like.

Particularly useful to this task will be a re-examination of Henri Bergson's term 'fabulation,' and by extension 'myth,' as discussed by Bergson and later Paul Tillich. Both Bergson and Tillich discuss fabulation and myth in terms of closed social discourses. I will make the case that by reinterpreting fabulation and myth in terms of *fiction*, that fabulation can be reappropriated as an open, creative activity.

Bergson likens the human gaze on the world to a series of "snapshots" (Bergson 1911, 306). The intellect attempts to compose this series of snapshots, artificially, into a form or an essence. While we look to form as the essence of a thing, to Bergson a thing's essence is in the changes that it undergoes: "[T]here is no form, since form is immobile and the reality is movement. What is real is the continual change of form: form is only a snapshot view of a transition" (302). Only by charting change do we get something of a telescopic rather than a snapshot view of the universe. As a genre within literature, science fiction is particularly suited to creating this telescopic view, and it does so by radically altering the scale of human narrative. Science fiction allows us to imagine human history and human interaction with the universe on a vast spatial and temporal scale, spanning galaxies and millennia[1].

Philosopher and science-fiction author Olaf Stapledon was a master of depicting the telescopic view, mythologizing the evolution of humankind on a cosmic scale, and his novels *Star Maker* and *Last and First Men* will be

1 While the genre of science fiction is of course not limited to prose fiction (including, for instance, film and computer games), it is in literary fiction that this sense of telescopic scale is most fully achieved. The creative participation of the reader is arguably at its fullest in such texts, as will be discussed further below.

explored here as examples of fabulation and myth-making within a process-thinking framework. Stapledon's works of cosmic scale have been a canonical influence on the genre, an influence acknowledged by those authors continuing to explore the cosmic imagination, such as Stephen Baxter, whose prolific writings trace the evolution of humans from earliest mammals to a self-creating far future[2]. This sense of cosmic scale is a contact point for science and theology. Both are faced with the challenge of positioning humanity in a known universe which is increasing in size at an unprecedented pace. (Take, for example, known exoplanets, for which there were none in 1992, and at the time of writing are 4058.)

But first, let us return briefly to fabulation, and the use of this term in relation to science fiction. In Stapledon's *Star Maker*, discussed below, we are introduced to civilisations for whom the mechanisation of society through intellectual development becomes destructive, and ultimately terminal. For Bergson, the fabulation function enables instinct to intervene when the dominance of intellect has become self-destructive. (For our purposes we can perhaps align 'intellect' here with 'empiricism.') In a society which has become dominated by the immanent, fabulation becomes a 'myth-making function,' through which is maintained the capacity to believe in the transcendent, without material or immediate presence. Bergson writes:

> If intelligence now threatens to break up social cohesion at certain points, and assuming that society is to go on, there must be a counterpoise, at these points, to intelligence. If this counterpoise cannot be instinct itself, for the very reason that its place has been taken by intelligence, the same effect must be produced by a virtuality of instinct, or, if you prefer it, by the residue of instinct which survives on the fringe of intelligence: it cannot exercise direct action, but, since intelligence works on representations, it will call up 'imaginary' ones, which will hold their own against the representation of reality and will succeed, through the agency of intelligence itself, in counteracting the work of intelligence. This would be the explanation of the myth making faculty (Bergson 1935, 112–13).

For both Tillich and Bergson, however, myth-making leads ultimately to a closed community, one that alienates itself from a dynamic culture (Tillich 1967, III.69; Bergson 1935, 229–30). Fabulation, in becoming myth-making, eventually becomes sterile. Indeed, Bergson equates myth-making with the most stagnant of religious institutions, writing: "A closed society can only live … through a religion born of the myth-making function. This

2 Most recently, Adrian Tchaikovsky has followed Stapledon in imagining a future for humankind both created by and ultimately alien to humanity in *Children of Time* (Tchaikovsky 2015) and its sequel *Children of Ruin* (Tchaikovsky 2019). For a detailed treatment of process philosophy in *Children of Time*, see Lehmann Imfeld 2018.

religion, which we have called static, and this [moral] obligation, which is tantamount to a pressure, are the very substance of a closed society" (Bergson 1935, 229–30).

The term 'myth' is often conflated with fabrication or mistaken ideas. 'That's just a myth!', we say of insupportable and thoughtlessly held beliefs. However, this is to understand myths as truth claims *in and of themselves*. Myths, as Ricœur explains, are not histories, they are universal symbols *narrated* as histories (Ricœur 1967, 234). Neither, however, are myths simple allegories. "Allegories" according to Ricœur, "can always be *translated* into a text that can be understood by itself; once this better text has been made out, the allegory falls away like a useless garment" (163). Myth, by contrast, "has a way of *revealing* things that is not reducible to any translation" (163). The purpose of myth is not direct representation of its subject, but to illuminate and interrogate its subject. Myth, then, is a unique form of story-telling: It cloaks itself in a concrete, observable event but is not confined by historicizing. It is symbol, but does not allow itself to be reduced to the symbolic. This definition of myth fits neatly with modern science-fiction writing. Science fiction also is an attempt to create narratives that interrogate and feed our understanding of the world. For this reason, the concept of myths as understood by philosophers will often be used interchangeably with literary fiction here – what can be said of one can be said of the other. For both, it will become clear that successful myth-making relies not on explanation, but on exploration.

This distinction between explanation and exploration is key to the ways in which the discussion here will depart from the thinking from which it is drawn. For instance, it will become clear that the creativity and novelty central to process thought informs much of my approach to science fiction as constructive myth. The discussion draws (albeit qualified) on the potency and novelty of the universe described by Bergson, and also on the role of 'new myths' described by Protestant theologian Paul Tillich. However, as both Bergson and Tillich see the function of myth as *explanatory* the consequences of myth for modern society are far more pessimistic for them than will be proposed here. My intention here is to suggest that literature, and science fiction in particular, demonstrates a form of myth-making/fabulation that is creative in a way nonetheless true to the philosophies of both Tillich and Bergson. I will also suggest that this is a form of myth-making that acknowledges and negotiates the 'empirical stance' (see van Fraassen 2002) of scientific activity. In this way science fiction provides a model for theology that is crucial if theologians are to maintain a voice in the scientific academy. This model is at once new, representing the novelty central

to process thought, and a return, linking back to medieval natural philosophy before religion and science were conceived as 'two cultures.' Ricœur describes it thus:

> In losing its explanatory pretensions the myth reveals its exploratory significance and its contribution to understanding … that is to say, its power of discovering and revealing the bond between man and what he considers sacred. Paradoxical as it may seem, the myth, when it is thus demythologized through contact with scientific history and elevated to the dignity of a symbol, is a dimension of modern thought (Ricœur 1967, 5).

Through an analysis of myth-making in the works of Olaf Stapledon, I will suggest ways in which theology as an academic discipline can participate in what I will term 'speculative empiricism,' reinforcing the need for creativity. This speculative empiricism will require a hospitality towards 'fabulation' that understands it not as invention or 'making up,' but as part of reconciling knowledge and understanding.

2. The Transcendent Realism of Science Fiction

In Paul Tillich's discussion of religious symbol, he identifies the breakdown of a unity between science and religion as signifying "the breaking down of the original mythical mentality" (Tillich 1960, 87). In doing so, Tillich points not to the disappearance of myth to modern society, but to the development of autonomous myths of religion and myths of science. Ricœur and Tillich offer two different solutions to this dichotomy; Ricœur, the elevation of the status of symbol, and Tillich the removal of symbol in transcendent language (see Tillich 1948, 67–69). This article attempts to describe something in between, a reconciling of symbol with knowledge. If we follow Tillich in seeing myth creation as part of cognitive attempts at epistemology (Tillich 1967, III.70), then we can recognise science fiction as an endeavour to escape the metaphysical demands of the empiricist tradition without denying them. Science fiction is thus unique in the literary tradition, and Robert Philmus situates it in these terms:

> The more or less ordinary incidents in pure 're-presentational' fiction do not require special scientific explanation. The more or less extraordinary incidents in pure supernatural fantasy do not allow any. Science fiction, by contrast, both allows and requires some kind of scientific, or seemingly scientific rationale for its contraventions of 'mundane actuality' (Philmus 1976, 5–6).

Science fiction achieves this reconciliation through what Darko Suvin terms 'cognitive estrangement.' In his seminal work *Metamorphoses of Science Fiction*, Suvin describes two essential 'rules' of science fiction. Science fiction

must introduce a *novum*, something entirely new to the world as we know it. In this way estrangement is introduced (Suvin 1979, 63–64). This estrangement, however, must not be caused by something fantastic. The reader must logically be able to incorporate this *novum* into her understanding of the world. While the *novum* in a science-fiction text cannot be empirically tested or proven, writes Suvin, "it *can* be methodologically developed against the background of a body of existing cognitions, or at the very least as a 'mental experiment' following accepted scientific, that is, cognitive, logic" (Suvin 1979, 66). To continue the analogy between science fiction and myth-making, Tillich describes myth in much the same cognitive terms. "A myth that is sought for as myth is for that very reason repelled," writes Tillich. "Only when one's thinking has objective reference can a truly mythical element pulse through it" (Tillich 1960, 88). Meaning-making through fiction, then, at once adheres to the constraints of the 'real' world, and also "liberates from bondage to the environment" (Tillich 1967, III.69).

Even what is new and estranged, then, must bring with it a sense of recognition – it must be recognisable to the logic of what Suvin calls the 'zero world.' This sense of recognition has its counterparts in both the discourse of empiricism and the discourse of theology. In scientific discourse, we might call this a set of 'known variables;' in theology, perhaps 'anamnesis.' This sense of recognisability together with novelty is crucial to the dynamic nature of science fiction. It means that speculative imagination can be introduced to a fictional model, while that model still attends to the demands of the 'empirical stance' (see van Fraassen 2002). It is this that reconciles science with symbol (what Tillich calls "transcendent realism," Tillich 1960, 88), and also adheres to what van Fraassen describes as "objectifying enquiry," in which new models must have recognisable constraints (van Fraassen 2002, 164).

Neither Suvin in describing science fiction, however, nor Tillich in describing religious symbol, see a place for myth in this model. For Suvin, myth represents the realm of the fantastic, thus failing the cognitive condition. For Tillich, monotheism breaks myth, as mythologised deities cannot be unconditioned or radically transcendent (Tillich 1967, I.232; 1960, 88). Bergson, likewise, sees myths as symptomatic of alienated and closed social groups. It is with some trepidation, then, that I would like to suggest that there is a role for myth-making in science fiction which then functions as transcendent realism. Indeed, this myth-making, in a new and creative form, can play an integral part in the unifying role of science fiction for religion and science. In his novel *Last and First Men*, Olaf Stapledon describes myth-making in terms which abide by the cognitive conditions described above:

> A true myth is one which, within the universe of a certain culture (living or dead), expresses richly, and often perhaps tragically, the highest admirations possible within that culture. A false myth is one which either violently transgresses the limits of credibility set by its own cultural matrix, or expresses admiration less developed than those of its culture's best vision. This book can no more claim to be true myth than true prophecy. But it is an essay in myth creation (Stapledon [1930] 2004, xiv).

The cultural matrix of today's society is one of a scientific cosmology (see van Fraassen 2002, 197–200). As we have already learnt from Suvin, if serious science fiction is to succeed it must not transgress the limits of scientific credibility. At the same time, the 'best vision' of today's culture remains the transcendent Absolute. A 'true myth,' as Stapledon describes it, must accommodate both. It is worth remaining with Stapledon here, as his fictional works provide useful examples of the type of science fiction being described.

3. Novel Cosmologies: *Star Maker* and *Last and First Men*

The British philosopher Olaf Stapledon was both theologically and philosophically agnostic. In his philosophical writings he acknowledges the influence of Whitehead, and shows sympathy for Whitehead's apparent need to reconcile his system with an absolute and eternal God. He writes: "The trend of his argument seems to be determined less by logical necessity than by the desire to complete his system by relating it, in however strange a manner, with religious orthodoxy" (Stapledon 1939, I.396; see also Polkinghorne 2009, 61–62). By acknowledging this tension, Stapledon is able to depict it creatively in his fictional works. For instance, Stapledon's eponymous 'Star Maker,' as we shall see below, is never directly declared to be a depiction of the Judeo-Christian God (despite clear allusions to a trinitarian nature), only that religious orthodoxy is inadequate to conceptualising it.

Two of Stapledon's major novels are useful to us here, in that they exemplify the 'speculative imagination.' The narratologist Isabelle Stengers has written extensively about the potency of the speculative imagination in terms of science fiction (Stengers 2018), but I would like to re-appropriate the term here, perhaps to something more akin to 'scientific imagination.' (Eventually, this will reach a description of 'speculative empiricism.') If we think of speculation as a scientific term, then 'speculative imagination' makes two demands. To materialists (as both van Fraassen and Stapledon call positivists), it demands that they step into the speculative, that they indulge in imagination. To philosophers, theologians, literary critics,

it acts as a constraint to fantasy. To speculate, after all, is not to invent with abandon, but to give thought to possible answers with the information that one has.

In *Star Maker*, Stapledon creates cosmological myth, but one which is open, and aims for a reconciliation of the immanent and the transcendent. The novel's narrator, while gazing languidly at the stars from his back garden, is whisked suddenly away on a disembodied tour through all of time and space. He watches civilisations develop and progress, or ultimately self-destruct. Likewise, he observes the lifecycles of stars and galaxies as they expand and eventually implode. As the narrator travels, he is joined by other minds, and they continue their cosmological journey as "communal observers" (Stapledon [1937] 1999, 125). Though insisting that individual identity is not dissolved in this communal mind, the narrator begins using the 'we' pronoun over the 'I.' They are, explains the narrator, at once 'I' and 'us': "It was the recollection of this fettered, imprisoned, blindfold, eager, private individuality, that enabled us to watch the unfolding of cosmical events not merely as a spectacle but with a sense of the poignancy of every individual life as it flashed and vanished" (127). It is through this narrative that Stapledon's readers are able to participate in what Stapledon calls the "hypertelescopic imagination" (6). Indeed, so expansive does this imagination become, that there comes a point at which the narrator finds it harder to imagine his home and family than he does the vastness of the cosmos (11).

This concurrent participation in the immanent and the transcendent imagination is central to science fiction's speculative imagination. In the depiction of these life-cycles through the eyes of a 'hypertelescopic imagination,' Stapledon immerses his reader in both individual human experience and cycles of time on a cosmic scale. Indeed, elsewhere Stapledon acknowledges Bergson's distinction between 'scientific time' and 'duration' (Stapledon 1939, II.381–82). This is a radical liberation from our perception of the world as described by Bergson. For Bergson, we cannot participate fully in the process of the universe, trapped as we are within our own immediate experience of it: "Our intellect, in the narrow sense of the word, is intended to secure the perfect fitting of our body to its environment, to represent the relations of external things among themselves – in short, to think matter" (Bergson 1911, ix). Through *language*, however, we attempt to imaginatively escape this 'snapshot view': "Instead of attaching ourselves to the inner becoming of things, we place ourselves outside them in order to recompose their becoming artificially" (306). *Star Maker's* narrator acknowledges the artificiality of his attempts to reconstruct his experiences, calling it "a ludicrously false caricature of our actual adventure" (Stapledon [1937] 1999,

65). Nevertheless, as readers, by participating in his narrative we are given (imaginative) access to what Bergson calls the cinematographer's view. The narrator could almost be speaking of his readers when he writes: "In the final stages of the exploration we made discoveries which might well be regarded as infinitely beyond the range of any single and unaided human mind" (64).

Imaginative creativity on the part of the reader is crucial if they are to participate in Stapledon's fictional universe, and this creative impulse lies at the heart of *Star Maker* itself. Each cycle of fictional civilisations depicted in *Star Maker* shows a co-dependency between intellect and creativity. As each culture develops and evolves, it inevitably privileges one worldview (the scientific or the religious) over another. For some civilisations, scientific progress is so fertile that it is able to continue for generations without any real originality. With it comes a mental shift towards science *as* religion. In one culture, for instance, an 'Age of Scientific Religion' develops, bringing with it the conviction that all previous religious traditions can be understood within the scientific method. These cultures inevitably stagnate, however, or even self-destruct through war or scientific recklessness. As his society breaks down into prolonged war, a citizen of one such culture realises that "my unhappy race has probably now doomed itself irrevocably" (45). Other cultures gravitate towards contemplative spirituality or orthodox religion, and a mentality of devout acquiescence develops. The zenith of these civilisations is when, "for a brief period they reached a plane of spiritual lucidity which was to be an example and a treasure for the future aeons of the galaxy" (120). These civilisations are also doomed, however, as they inevitably sacrifice their intellectual innovations and physical capacities: "One by one the blissful and no longer human inhabitants of that world passed from ecstasy to sickness, despondency, uncomprehending bewilderment, and on to death" (121).

Once again we see Stapledon imaginatively depicting the need for the reconciliation of the immanent and the transcendent. Like Stapledon, Bergson describes a society in which intellect dominates over instinct (or in Stapledon's depiction also the reverse) as one which is hopeless. "The intellect," claims Bergson, "is characterised by a natural inability to comprehend life" (Bergson 1911, 165). For both types of culture, they condemn themselves by no longer participating in the creative process of their own environment. They no longer perceive their cosmos as a mythical whole. Tillich also describes our own civilisation in terms not unlike Stapledon:

> The breaking down of this unity [between the religious transcendent and the rational; ZLI] signifies a transition into an autonomous religion and into an autonomous science, and thus it signifies the breaking down of the original mythical mentality. At the same

time, however, the mythical stands forth in its purity and in its true character, as a necessary element in the construction of a meaningful reality (Tillich 1960, 87).

Mythical apparatus, even when broken, serves to unite intellectual and transcendental thought, and with it our participation in the cosmos. For the civilisations of *Star Maker*, the mythical mentality is shown to be a catalyst for novelty and originality. Moreover, this novelty is necessary for cosmological survival. When the civilisations lose this sensitivity to originality and enter a phase that the narrator describes as "pseudo-civilised barbarism" (78), they inevitably collapse. As he witnesses this pattern repeated throughout the universe, the narrator realises that "in order to maintain continued adaptability to an ever-changing environment a race must at all costs preserve in itself its slight but potent salting of sensibility and orginality" (78).

The same cycle occurs in *Last and First Men*, another novel of enormous scale, but this time depicting not cosmologies but the evolution of humankind over a vast timescale. Like those of *Star Maker*, the 'first men' of the novel create a society in which science becomes a religion, and those of scientific intellect and training become ever more elitist. This elite becomes increasingly divorced from the resulting underclasses, which are kept deliberately infantile and uneducated: "Less care was taken to educate them up to an understanding and appreciation of the *common human enterprise*" (Stapledon [1930] 2004, 98, my emphasis). Inevitably, the scientific utopia promised by this civilisation (unlimited energy akin to atomic energy) is ruined by its social inequality (the dangerous labour for its production undertaken by the lower, deliberately uneducated classes). The potential stability of this society breaks down and the uneducated classes seize and destroy the power plants. Without a shared knowledge or understanding of the material, their handling of it is apocalyptic:

At last the awful djin of physical energy was able to wrench off his fetters and rage over the planet. … Of the two hundred million members of the human race, all were burnt or roasted or suffocated within three months – all but thirty-five, who happened to be in the neighbourhood of the North Pole (100).

These thirty-five go on to propagate, after some ten-million years of primitivism, the 'second men.'

So far then, we have seen the necessity of cooperation between science and religion for the success of civilisations. In the 'first men,' we are now also shown the need for such cooperation to be an inclusive, *communal* endeavour. The death knell for the first men comes not from their scientific progress *per se*, but by their insistence on closing down the communal potential for this progress, excluding the 'lower classes' by means of quasi-religious myths

and orthodoxies. Again, Stapledon depicts a society whose very survival depends on *both* scientific and religious creativity. In his non-fictional work *Philosophy and Living*, Stapledon expands on this:

> For the activity of conscious beings produces novel situations in which new forms of personality and of community emerge, and new, hitherto inconceivable capacities demand expression. By means of intelligence and creative imagination conscious beings can sometimes so manipulate reality in the external world and themselves that it will manifest entirely new aspects of itself (Stapledon 1939, 404).

Fulfilling the potential of humankind thus involves creative interaction with its environment – changing and being changed.

Stapledon's new myths of humanity, then, are embedded in a post-Darwinian evolutionary 'chronotope' (see Gregory 2015, 97) which is insistently non-teleological. The societies of both *Star Maker* and *Last and First Men* are subject to their own creative potential (or lack thereof) and, just as importantly, chance. The narrator of *Star Maker*, at the end of his cosmic journey, finally reaches an understanding of the eponymous star maker, creator of the many universes he has witnessed: "I stood, confronted by the infinity that men call God, and conceive according to their human cravings" (Stapledon [1937] 1999, 218). The narrator's ultimate revelation is not one of ecstasy, however, but of despair, as he recognises the star maker to be *both* the "perfection of the absolute spirit" (216) *and* creative without teleological design. That the star maker encompasses both the Christian conception of God as Creator and also the creation of the universe as capricious is demonstrated in the paradoxical creativity of the star maker. Here, for instance, are depicted allusions both to Genesis and to the Big Bang theory:

> Then the Star Maker said 'Let there be light.' And there was light. From all the coincident and punctual centres of power, light leapt and blazed. The cosmos exploded, actualizing its potentiality of space and time. The centres of power, like fragments of a bursting bomb were hurled apart. But each one retained in itself, as a memory and a longing, the single spirit of the whole; and each mirrored in itself aspects of all others throughout all the cosmical space and time (217).

Creation, therefore, is both purposeful ('Let there be light') and chaotic.

This depiction should not be misunderstood as nihilistic or atheistic, however. Stapledon's myth incorporates Judeo-Christian myths as exemplary religion, but also exposes the destructive potential of religious orthodoxy. Stapledon's new myth is one in which the potency of humanity is nurtured when religious spirit responds to and motivates scientific interaction with the cosmos. Scientific advancement, in turn, provides checks and balances to narrow-minded religious orthodoxies or self-indulgent spiritual contemplation. Crucially this creative potency of humanity relies

on a common human enterprise. Humanity must invest in itself as a creative part of the cosmos: "The incalculable potency of the cosmos mysteriously enhanced the rightness of our brief spark of community, and mankind's brief, uncertain venture. And these in turn quickened the cosmos" (Stapledon [1930] 2004, 4).

4. Academics as Myth Makers

In thinking about the role of fiction (especially science fiction) in negotiating science and religion, we can extract lessons from the thought experiments provided by Stapledon. Indeed, just the act of reading Stapledon's novels as part of thinking about this negotiation already demonstrates an important step. Using *Star Maker* or *Last and First Men* as an analogy for science and religion relies on the reader's creative spirit and hospitality to Stapledon's model. Such hospitality reflects the same receptivity required for scientists and theologians to become makers of 'new myths.'

In the context of science and religion new myths offer an opportunity to foster this hospitality. Fabulation as described by Bergson is ultimately an inhospitable concept, closed as it is to new creativity. Fabulation does not reconcile imagination and intellect, but shuts it down by providing actual representations of that which is not actual. The 'fabulation function,' then (or imagination for our purposes), serves not to elucidate reality, nor does it contribute to our intellectual understanding of it. Rather, it shuts down the potency of intellect. Described in these terms, it is understandable that these myths or fabulations are inadequate to the scrutiny of either interrogative theologians or to a sceptical positivist eye. They neither successfully capture the transcendence of what they represent, nor do they find their place in the lived, experienced world.

Science-fiction myths are something altogether different, however. Literature *declares* its separation from that which it represents. The demands made on readers of literature are not of belief or disbelief, but participation in its meaning-making. In its treatment of the sciences, science fiction is yet more radical within literature. Science fiction's declared separation from the sciences that it represents nonetheless reaffirms the status of the scientific method. Chu describes it thus:

> Tellingly, SF is called neither 'scientific fiction' nor 'fictional science' – phrases in which a noun is modified by an adjective – but 'science fiction,' a phrase that violently yokes together two heterogeneous nouns while leaving both terms unmodified (Chu 2010, 12).

Tillich refers to "cognitive self-creation" when he writes: "As the bearer of meaning, the word liberates from bondage to the environment, a bondage to which life in all previous dimensions is subjected" (Tillich 1967, III.69). To Tillich, however, ambiguity is introduced by language in that it separates the meaning of the word from the reality to which it refers. This ambiguity is, for Tillich, ultimately incommunicative and falsifying. Literature on the other hand (I suggest), is self-consciously ambiguous. It deliberately leaves gaps in its meaning-making that the reader is invited to fill. Indeed, literary criticism has a school of thought explicitly concerned with the creative participation of the reader. Through Reader-Response Criticism, Wolfgang Iser describes a necessary level of indeterminacy in literary texts. He writes:

> Between the 'schematized views' there is a no-man's-land of indeterminacy, which results precisely from the determinacy of each individual view in its sequence. Gaps are bound to open up, and they offer a free play in the interpretation of the specific ways in which the various views can be connected with one another. These gaps give the reader a chance to build his own bridges, relating the different aspects of the object which have thus far been revealed to him (Iser 1989, 9).

It is immediately clear that Iser's description of the reading act speaks to the distinction between explanation and exploration encountered earlier in this article. It is also important, however, in that it describes not only how the reader contributes to the creation of a text, but also how the reader is themself changed, through reconsidering and revisiting various 'points of view.' Demands are made on the reader just as on the text. In this way literature escapes Tillich's charge of linguistic deceit.

These exploratory demands on the reader are what gives science-fiction literature its potency as a negotiator between science and religion. We will remember from Suvin that science fiction does not invite its reader to recklessly fill these gaps with whatever she sees fit. Rather, it estranges the reader from the known world so that the world can be seen afresh. As Viktor Schklovsky famously put it: "[A]rt exists that one may recover the sensation of life; it exists to make one feel things, to make the stone stony" (Schklovsky [1917] 2006, 778). If science-fiction myths elucidate and renew religious myths, these new myths must acknowledge and respond to the boundaries of the universe as it is understood. Even Stapledon's 'star maker' is bound by the conceivable: "He was limited only by logic. Thus he could ordain the most surprising natural laws, but he could not, for instance, make twice two equal five" (Stapledon [1937] 1999, 226). Likewise, readers of science fiction cannot completely depart from their cognitive frames of reference, but neither can they simply shut down representations of religious myth as incongruent to measurable experience. The speculative imagination of science

fiction refuses to be limited to the measurable – it is limited rather by cognitive plausibility within our understanding of the world. Van Fraassen hints at such an imaginative empiricist approach when he writes: "No empiricism today can be empiricism as it has been. The empiricist tradition, like any tradition, cannot live unless it renews itself" (van Fraassen 2002, xviii).

5. Speculative Empiricism

So we begin to see a model for empiricism embracing imaginative speculation. To expand on how this 'speculative empiricism' is useful to religion and science, I will focus now on theology's need for hospitality to the scientific method. (This is done on the understanding that the same demands are implicitly being made of scientific thinking towards religious thought.) Jewish theologian Emil Fackenheim recognises the need for hospitable theology, writing: "By the terms of *its* self-understanding … modern faith (Jewish or Christian) cannot afford to ignore secularism. Religious immediacy must expose itself to the threat of subjectivist-reductionist reflection" (Fackenheim 1972, 47). Speculative empiricism, however, goes yet further. Theology is invited not simply to *respond* to challenges from the secular and/or scientific critique, but to *creatively* engage with them. The suggestion is that religious thinking can be reinvigorated and reaffirmed by acknowledging the scientific method. Tillich recognises such openness as fertile to religious thought, rather than destructive: "Science becomes a myth despite its rational autonomy, and religion absorbs certain aspects of the understanding and knowledge of the world, despite its own transcendent autonomy, in order in these ways to sense the transcendent" (Tillich 1960, 87).

As we saw in *Star Maker*, humanity requires imaginative cooperation between religion and science. Dogmatism on either part leads only to stagnation. And yet, cooperation requires agreement on certain levels least. Neither 'faith seeking understanding' nor the empirical stance can be expected to abandon their methodologies for the other. Here again, we return to the privileged status of science fiction. Science fiction does not simply translate science into fiction, nor translate metaphysical concepts into scientific discourse. Rather, science fiction transforms concepts into something novel – it creates new myths that liberate discourse from its old ones. It is this process of creative transformation that provides a hospitable space in which religion and science can interact and interrogate each other. The literary critic Gillian Beer realises the importance of this 'in-between' space when she writes:

> More is to be gained from analysing the transformations that occur when ideas change creative context and encounter fresh readers. The fleeting and discontinuous may be as significant in our reading as the secure locking of equivalent meanings (Beer 1990, 81).

Yet this liberated, transforming space still has rules – the relationship between religion and science does not have the chance here to deteriorate into absurdity. For then the reader has entered the realm of the fantastic, a realm recognisable neither to science nor theology. Perhaps science fiction can invite us down new avenues of interdisciplinary exploration: "For, no matter how alien from one another at the outset, each group gradually acquired such far-reaching imaginative power that sooner or later it was sure to make contact with others" (Stapledon [1937] 1999, 64).

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